Nokia M1122

ADSL Router

T66280

USER MANUAL

NOKIA

M1122

ADSL Router

User Manual

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1 Introduction to Nokia M1122

Nokia M1122 is an integrated ADSL (Asymmetric Digital Subscriber Line) bridge and router which enables high-speed Internet access from your Ethernet local area network (LAN). It multiplies the capacity of the already installed telephone lines used traditionally for telephone and dial-up modem services. M1122 brings high-speed connections available for home users, small offices and telecommuters. An in-built 4-port hub allows easy home and small office network installation.

Figure 1 Nokia M1122

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2 Installing M1122

Before you install M1122 you may want to familiarise yourself with the interfaces and indicator lights of M1122. From section 2.3 you will find a step-by-step installation procedure, which shows the physical installation of M1122.

2.1 Interfaces

M1122 has one ADSL line interface and four LAN interfaces (10Base-T Ethernet). It also has a local management interface (CLI) for management purposes. The ADSL line interface is compatible with ITU-T G.992.1 specification.

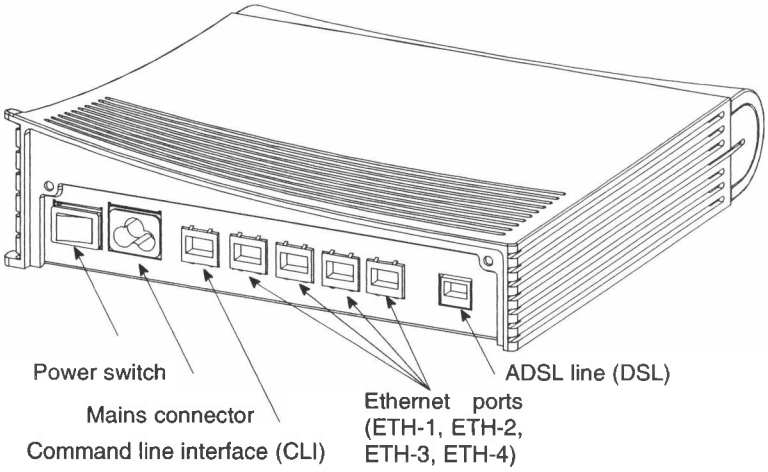

Figure 2 M1122 back panel

2.2 Indicator lights

M1122 has eight indicator lights on the front panel: PWR, STA, COL, ETH-1, ETH-2, ETH-3, ETH-4, and DSL. STA indicator is red. Other indicators are green.

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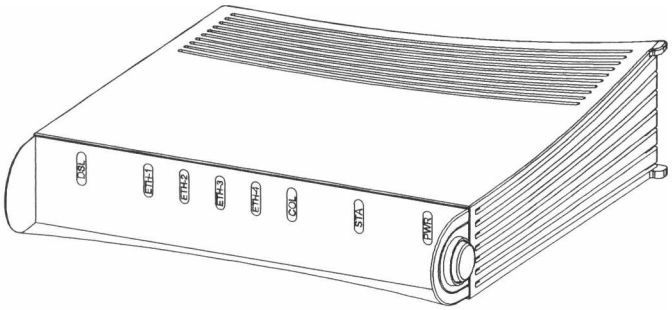

Figure 3 M1122 front panel indicators

DSL GREEN

Off	ADSL link is down.
Blinks	ADSL connection is being established.
On	ADSL link is up.

ETH- GREEN

Off	Ethernet is down.
On	10Base-T Ethernet is functional
Blinks	Receives traffic from Ethernet.

COL GREEN

Blinks	Collisions on the Ethernet. Note, that it is normal that some collisions occur on the Ethernet.

STA RED

Off	OK
On	Hardware malfunction during startup.

PWR GREEN

Off	Power off.
On	Power on.

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2.3 Step-by-step installation procedure

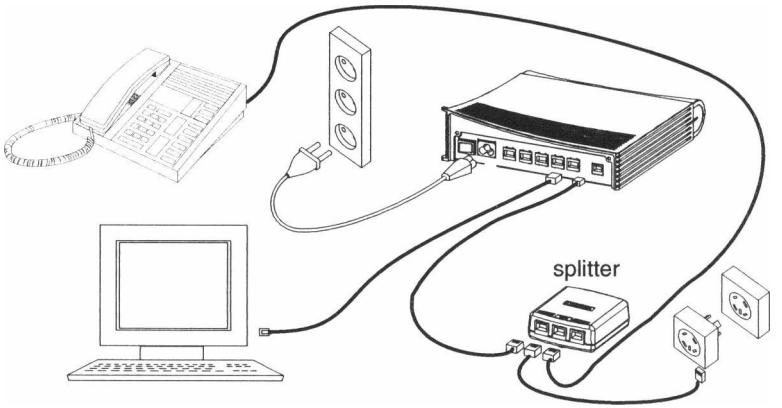

Figure 4 M1122 with cables and splitter (T66270) connected (Telephone and ADSL services)

1. Plug the mains power cord to a mains outlet.
2. Switch on M1122. The PWR indicator lights up. After a while, the red STA indicator blinks and then remains unlit. M1122 is now functional.
3. Connect the Ethernet cable between your PC's 10Base-T connector and the Ethernet connector on the M1122 back panel (ETH-1, ETH-2, ETH-3, or ETH-4).
4. Switch on your PC. The indicator corresponding the Ethernet port you connected your PC to becomes green when your PC has started. This indicator blinks when there is traffic in the corresponding Ethernet port.
5. Connect the ADSL line cable between the DSL connector on the M1122 back panel and ADSL line wall socket. If you want to use ADSL and telephone services simultaneously, connect the splitter according to Figure 4. After a while, the DSL indicator starts blinking. This indicates that the ADSL line is being established. When the DSL indicator remains lit, the line is functional.
6. During normal operation PWR and DSL indicators are lit and the Ethernet indicators of the active Ethernet ports blink or are lit depending whether there is traffic or not. COL indicator may blink occasionally during normal operation.

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Now, your M1122 has been connected and you can check the connections according to your service provider's instructions.

2.4 Installing M1122 on the wall

M1122 can also be wall mounted. Figure 5 shows the installation procedure.

1. Drill two holes (6 mm in diameter) on the wall. The distance between the holes must be 155 mm. Insert the plugs to the holes and fix the screws.
2. Mount the modem on the wall as shown in Figure 5.

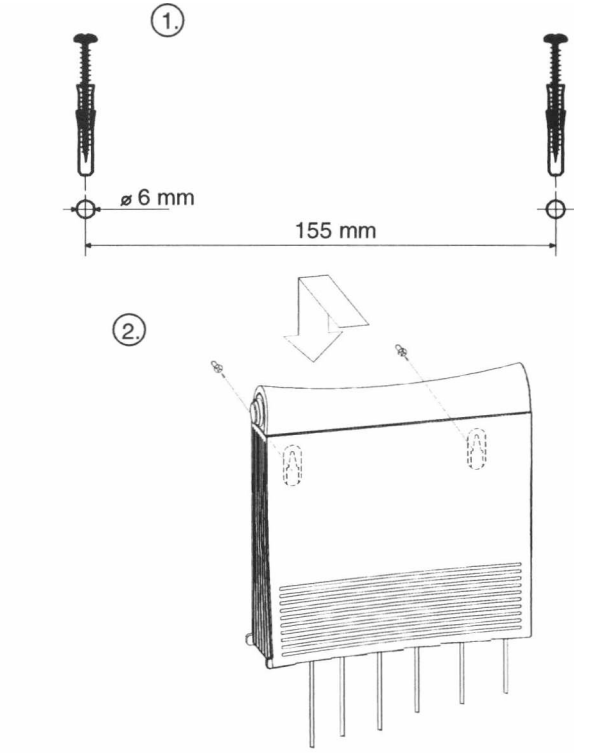

Figure 5 Wall installation

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3 Configuring M1122

Your service provider has configured your M1122 for the service. **Do not change settings unless specifically asked by your service provider.** You can change M1122 settings with an ordinary web browser such as Microsoft Internet Explorer or Netscape Navigator.

Use a PC connected to an ETH port of M1122 for configuration. In this case the corresponding ETH indicator should be lit.

3.1 Browser management

You can use your PC's web browser software to access the web configuration pages in M1122. To access the web pages you must know the IP address of your M1122 or, alternatively, the "name" that your M1122 recognises.

Note
Before using your web browser for configuration, you must know the IP address or the name assigned to your M1122.

There are three ways to find out whether to use a name or an IP address:

- Your service provider has given you an IP address for M1122.
- Your M1122 uses Dynamic Host Configuration Protocol (DHCP) and Domain Name Server. In this case the name is *M1122*.
- Your M1122 uses DHCP. In this case run winipcfg.exe (Windows 95) or ipconfig.exe (Windows NT). The IP address of M1122 is the Default Gateway address shown by the ipconfig program.

3.1.1 Opening a connection

To open a connection to the Nokia M1122:

1. Start your web browser.
2. Enter the name ('M1122') or IP address of your Nokia M1122 in the browser's **Location** or **Address** field and press **Enter**.
3. Type in the username/password as requested. If no username/password is required, just click **OK** to proceed. The **Nokia M1122 Main Page** appears.

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3.1.2 Main Page

Main Page is shown first when you use a web browser to connect to M1122. The list on the left shows the current page highlighted. Clicking an item on the list (**Service Providers**, **Local Network**, **Statistics**, **Restart**, and **Save Config**) takes you to the corresponding page.

Note

When you make modifications to the configuration, remember to save the configuration and restart your M1122 for your changes to take effect.

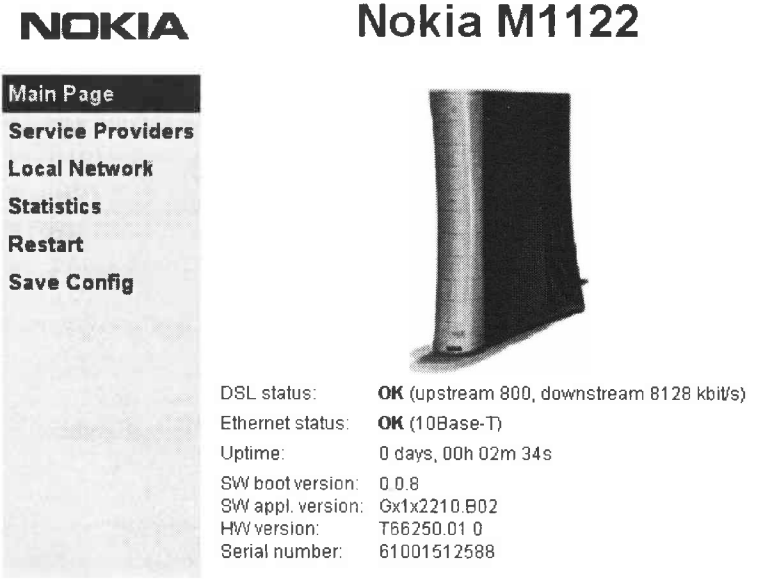

Figure 6 Main Page

The **Main Page** shows you the statuses of the DSL line and the Ethernet interfaces. Software and hardware versions and the serial number of M1122 are shown in the bottom of the page.

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3.1.3 Service Providers pages

The **Service Providers** page can be used to set authentication for ATM VCCs with PPP encapsulation (Figure 7). You can set the **Authentication method** and the corresponding **Username** and **Password**. You can also view **Network connection information** in the bottom of the page. If you are using PPTP encapsulation, you can change the name of the connection through the **Service Providers** page (Figure 8).

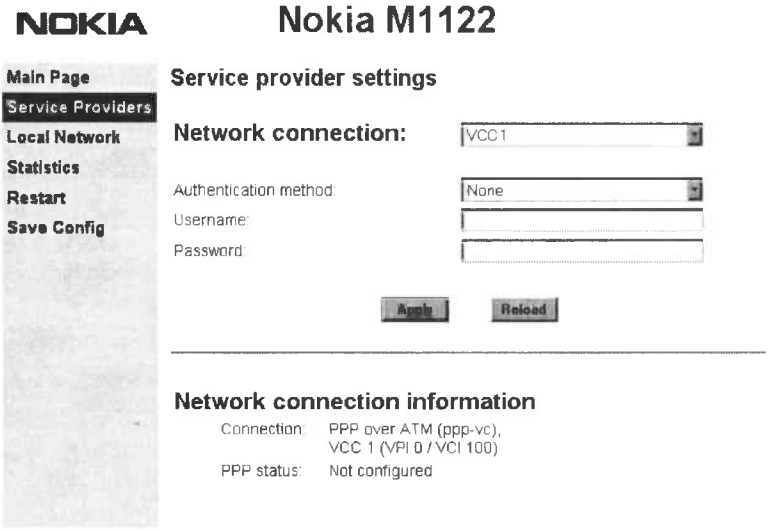

Figure 7 Service Providers page with PPP configuration

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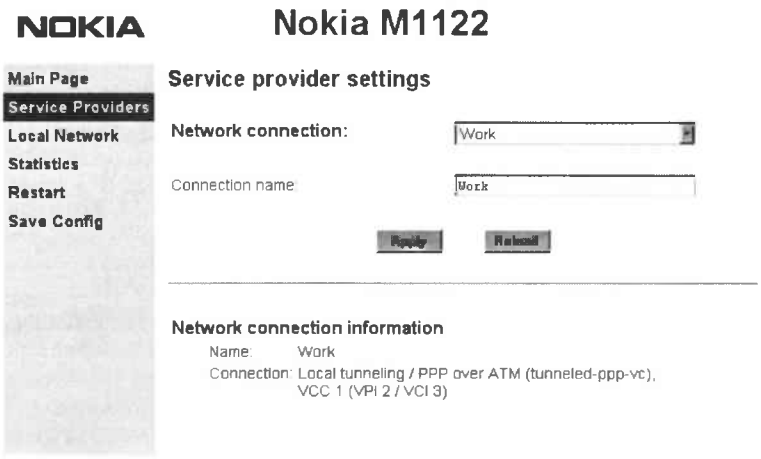

Figure 8 Service Providers page with PPTP configuration

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3.1.4 Local Network pages

The **Local Network** page as four pages: **Local Ports, DHCP, NAPT,** and **Routing**.

Local ports

On the **Local Network Local Ports** page you can assign an IP address to the Ethernet ports.

Note

When you click **Apply**, the IP addresses are changed immediately. If the IP address of the interface you are using changes the connection will be lost. You have to reconfigure the IP address of the accessing host. For example, in Windows programs winipcfg.exe or ipconfig.exe must be used first to release the old address and then to renew to request new address.

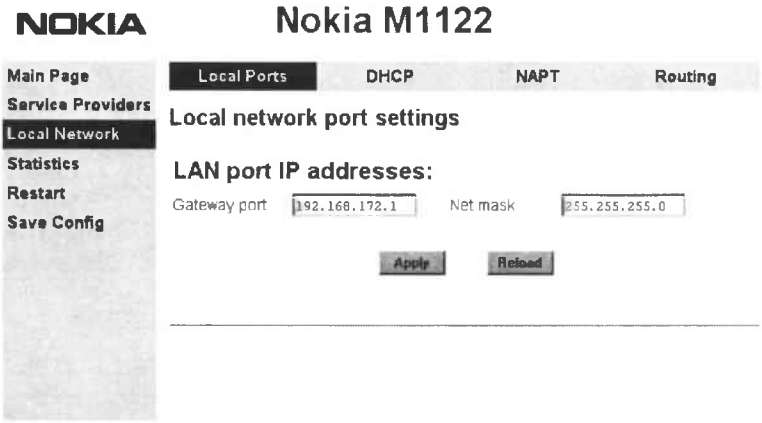

Figure 9 Local Network Local Ports page

DHCP

On the **Local Network DHCP** page you can enable/disable Dynamic Host Control Protocol and set the **Address ranges** from which the addresses are distributed to the DHCP clients on your network. You can also set the Domain Name Server addresses here.

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Start address is the first address in the address range. The **Range size** defines how many addresses the range contains. **Subnet mask** is the subnet mask of the addresses in the range. **Primary** and **Secondary DNSs** set the domain name servers for the corresponding address range. **Lease time** defines how often the DHCP client must renew its lease. **Domain name** defines the domain name for the range.

The DHCP server can be enabled towards LAN and VBRIDGE (gateway interface) ports. When the DHCP server is enabled, up to two scopes (address ranges) are automatically generated and bound to LAN/VBRIDGE interfaces, in this order if the interface has an IP address. Two separate address ranges can be used if more than 253 addresses are required on the local subnet, if two non-contiguous ranges are needed or if an additional router with a DHCP relay is used on the local network. In Figure 10, scope (a) is has been bound to Ethernet interface and scope (b) to VBRIDGE interface. When the address ranges are not defined, M1122 uses the default values for all DHCP parameters. The default values are:

- Start address is the interface IP address
- Subnet mask 255.255.255.0
- Range size of up to 253 addresses starting from the interface IP address.
- DNS address is the interface IP address
- Lease time is 60 minutes
- Domain name is null string

If at least one address range has been defined, then IP address, DNS, domain name and lease time, if defined, override the default values.

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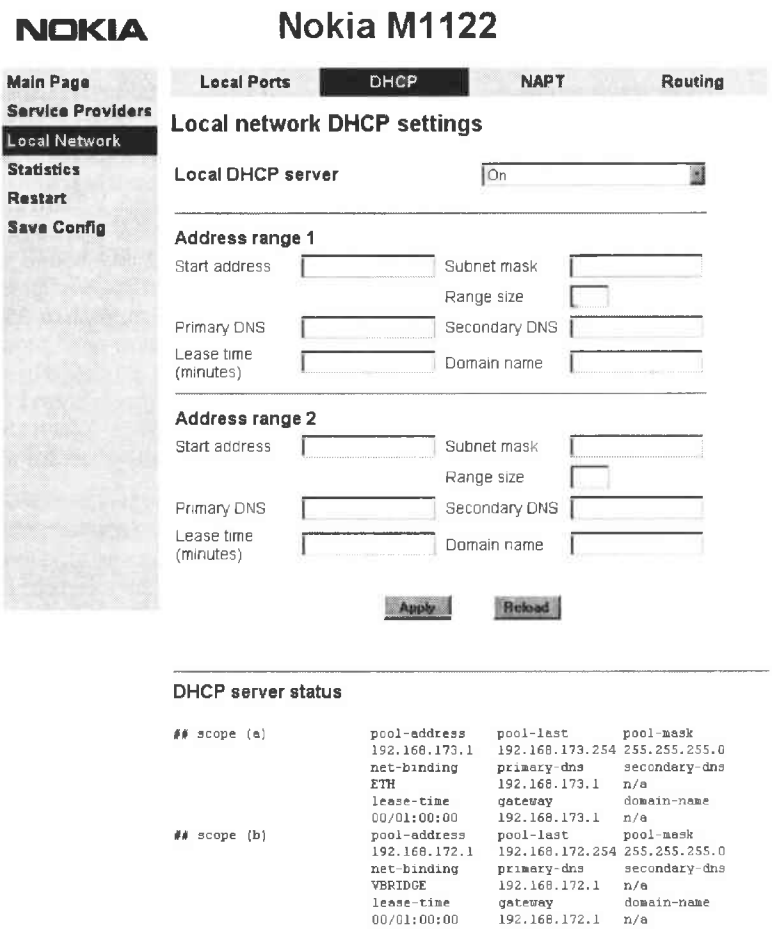

Figure 10 Local Network DHCP page

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NAPT

If Network Address Port Translation (NAPT) has been activated, servers on your local network are not visible outside your network. On **NAPT** page, you can configure pinholes through which you can provide outside access to your web server from the Internet, for example.

In the example shown in Figure 11, a pinhole has been added on the **Server list**. This example means that all TCP traffic coming from the Internet through **Work** to ports 80...89 will be mapped to the IP address 192.168.1.15 ports 90...99 on your local network.

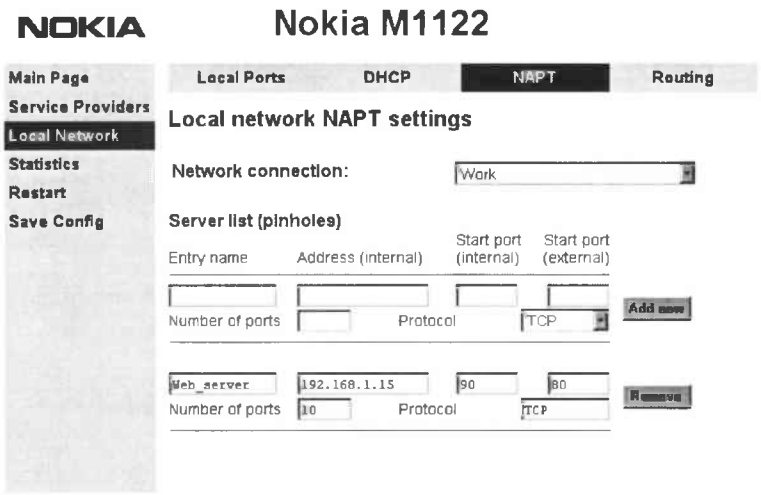

Figure 11 Local Network NAPT page

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Routing page

On the **Local Network Routing** page you can set static routes and enable/disable dynamic routing protocols (Routing Information Protocol version 1 and 2).

To enable dynamic routing to a particular interface select the Routing protocol version from the pull-down list and click the **Apply** button. RIP versions 1 and 2 are supported. **Send v1-compat. v2** option enables the sending of RIPv2 packets using broadcast. **Receive v1-compat. v2** option enables the receiving of both RIPv1 and RIPv2 packets.

To add a static route, type in the **Destination network** IP address, the **Subnet mask** of the destination network, and the **Gateway** and the **Interface** through which the destination network can be reached. Then click the **Add new** button. There are two static routes in Figure 12.

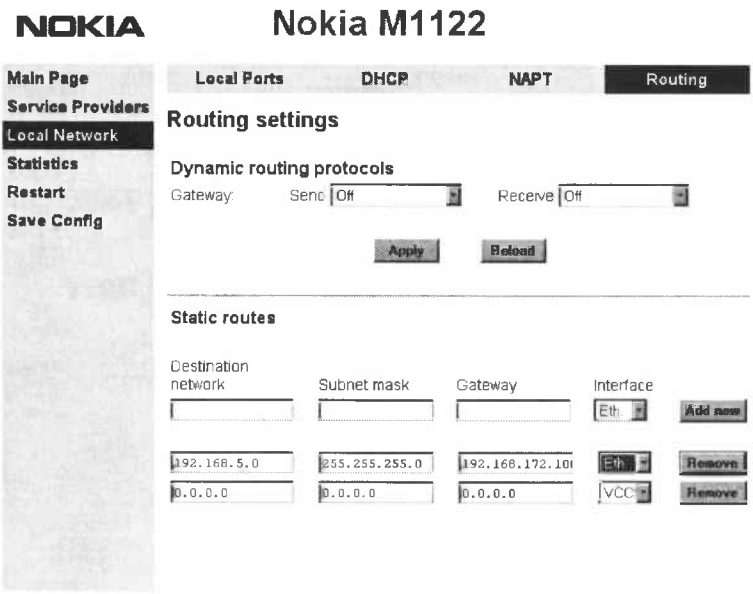

Figure 12 Local Network Routing page

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3.1.5 Statistics page

The **Statistics** page lets you view a selection of M1122 statistics. to view statistics of a particular function, click the corresponding button and the statistics view is opened on a separate window.

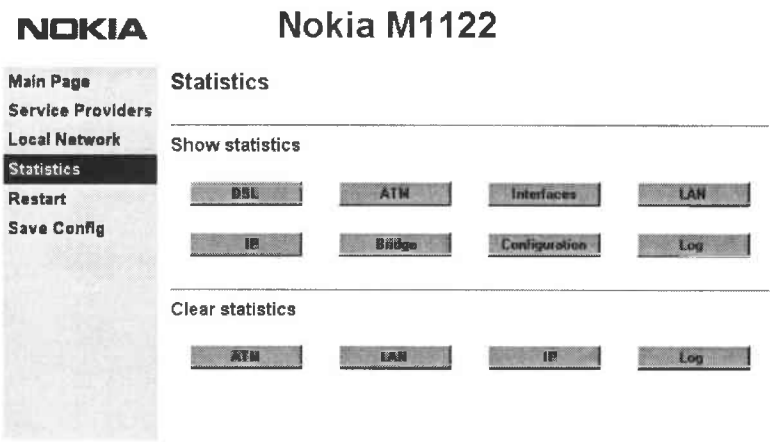

Figure 13 Statistics page

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3.1.6 Restart page

On the **Restart** page, you can reset subsystems and restart M1122.

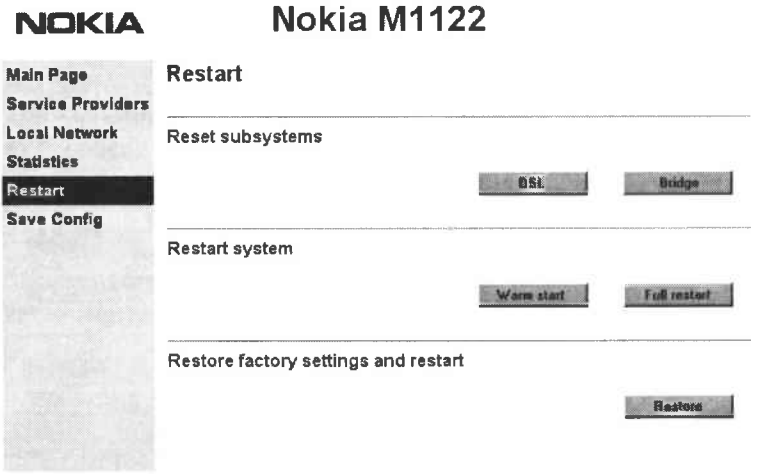

Figure 14 Restart page

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3.1.7 Save Config page

When you change the configuration, all configuration changes are activated immediately without restart/reload. However, the configuration will not be saved into the nonvolatile memory. If M1122 is restarted or powered down without saving the configuration, the old configuration will be restored. Clicking the **Save configuration** button saves the configuration into the nonvolatile memory and the old configuration cannot be restored through the web interface.

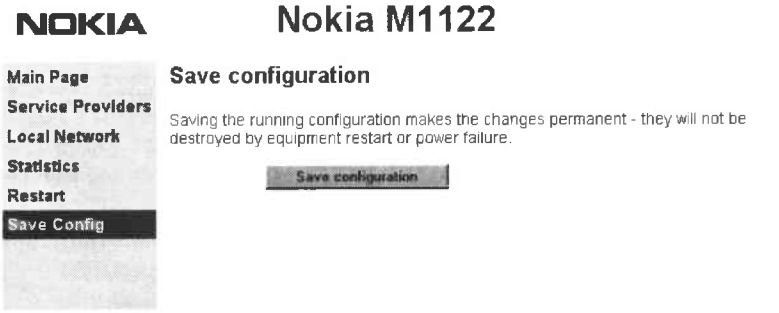

Figure 15 Save Config page

4 Features

M1122 can operate as a bridge and/or Internet Protocol (IP) router between Ethernet and the virtual channels of ADSL/ATM interfaces supporting both dynamic and static routing.

4.1 Interfaces

M1122 has the following interfaces:

- Four Ethernet interfaces (ETH-)
- 8 ATM VCC interfaces
- ATM VCC management interface

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- Gateway/bridge management interface. This interface is used as a bridge host interface or gateway interface depending on the operation mode. In this manual it is called VBRIDGE. On the M1122 web pages, the interface is called gateway or bridge IP interface.

M1122 can operate in four different main modes:

- Bridging only
- Routing/tunneling IP only
- Routing/tunneling IP, bridging all but IP
- Routing/tunneling IP and bridging all, including IP

The mode in which M1122 operates depends on the configuration of the unit's interfaces.

Ethernet interface

Ethernet interface can be configured to bridge and route packets. There are three different operational modes in the Ethernet interface:

- Bridging only; only bridging is activated in the interface. In this case the interface bridges all protocols.
- Routing only; only IP address is configured in the interface. In this case, the interface routes IP packets.
- Bridging and routing; Bridging is activated in the interface and IP address is configured in the interface. In this case, the interface routes IP packets and bridges all other packets.

Internal host/gateway interface

There is a special host/gateway logical IP interface within M1122 called VBRIDGE. This interface has a specific purpose in M1122. In applications where some ATM virtual channel connections are used for bridging IP traffic and some other ATM virtual channel connections are used for routing IP traffic, the VBRIDGE interface must be used instead of ETH IP addresses. Alternatively, this interface is used in bridge only application when the IP address is required for remote management purposes.

Data VCC operation

M1122 supports the following encapsulations in each ATM data virtual channel individually:

- RFC2684 LLC encapsulation for bridged IP (ETH-LLC)
- RFC2684 LLC encapsulation for routed IP (IP-LLC)

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- RFC2364 Virtual circuit multiplexed PPP over AAL5 (PPP-VC)
- RFC2364 Virtual circuit multiplexed PPP over AAL5 used to tunnel LAN/VBRIDGE PPTP packets (TUNNELED-PPP-VC)

If an IP address is given to a virtual channel interface and bridging is enabled at that interface, then IP data at that interface is routed and all other protocols are bridged. The only encapsulation which allows both bridging and routing simultaneously is ETH-LLC. For example, it is possible to route ETH-LLC encapsulated packets and at the same time bridge, for example, PPPoE packets (PPPoE packets are transported directly over Ethernet frame, not within IP packets).

4.2 Routing

Routing is based on routing entries in a routing table. Static routes are added via the management interface and dynamic routing is done using RIP and RIPv2. Routing is done between the Ethernet 10Base-T interface and the virtual channel connection (VCC) of the ATM/ADSL interface. M1122 supports up to 8 simultaneous VCCs.

M1122 can operate as an IGMP proxy. It can send IGMP Host Membership Queries to all hosts on its local network to learn about the host group members. The host group members respond by sending Host Membership Reports to the IGMP proxy. When the IGMP proxy receives a multicast transmission, it maps the host group address to the associated hardware address.

4.3 Bridging

Bridging is supported to provide full protocol transparency. Bridging can be used simultaneously with IP routing. M1122 works as a self-learning bridge supporting up to 1024 MAC addresses. Bridging is done between the Ethernet 10Base-T interface and each ATM VCC interface. Optionally, the bridging between the VCCs can be disabled.

4.4 Network Address Port Translation

M1122 supports Network Address Port Translation (NAPT) for TCP/IP, UDP/IP and ICMP/IP protocols. When NAPT is used, a single IP address is allocated to a VCC which leads to the public IP network. The Ethernet subnet has private IP addressing and is not visible to the VCC. NAPT translates the IP source address and source port number

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dynamically to the VCC IP address and port number. Similarly, packets coming from the VCC are mapped back to the original destination addresses. NAPT allows up to hundreds of hosts to share a single VCC IP address to the public network. The principle of Network Address Port Translation is presented in Figure 16.

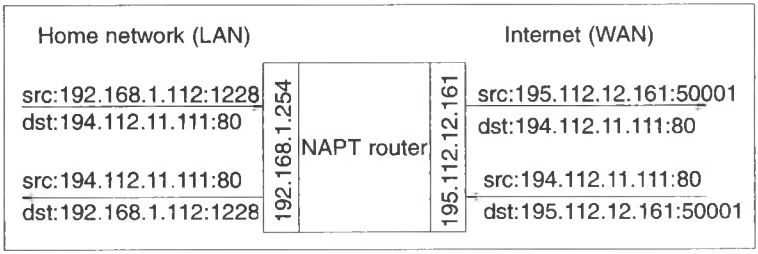

Figure 16 Principle of Network Address Port Translation

NAPT may restrict the operation of some IP applications. NAPT also operates as a simple IP firewall because translation is only allowed when the first packet is transmitted from the LAN. This means that the NAPT table entry is created only when a packet is sent from the home network to the Internet. With server support capability, the user can add static entries to the NAPT table allowing the translation always in both directions. This capability is used to add servers (HTTP, NNTP, and FTP), which are visible to the public IP network via the VCC, on the LAN subnet.

NAPT supports most IP-based protocols. Because NAPT operates on the IP and transport layer, the application that includes IP address and port within the payload will not work properly through NAPT. In many cases, these applications can be passed through the NAPT using Application Layer Gateway functionality (ALG). M1122 has ALG for the following protocols/applications:

- ICMP
- FTP
- H.323 including NetMeeting
- CUSeeMe
- PPTP
- IRC
- IPSEC ESP tunnel mode and IKE

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Note, that most IPSEC implementations will fail when passed through NAPT. A typical reason is that the identification may fail if the identification is based on IP address. Also, only tunnel mode without Authentication Header (AH) works.

4.5 Dynamic Host Configuration Protocol

M1122 can act as a Dynamic Host Configuration Protocol (DHCP) server for the PCs on the end-user home network. In this mode, M1122 can assign up to 253+253 consecutive addresses from two separate address ranges (that is, 253 consecutive addresses per address range) to the PCs on the home network. Two separate address ranges can be used if more than 253 addresses are required on the local subnet, if two non-contiguous address ranges are needed or if an additional router with DHCP relay is used on the local subnet.. M1122 can also act as a DHCP relay agent and relay the DHCP requests to an external DHCP server.

4.6 ATM and ADSL

M1122 supports up to 8 simultaneous VCCs and supports UBR (Unspecified bit rate) traffic shaping on all VCCs. The maximum transmit rate on each VCC is the ADSL upstream capacity. If more than one VCC is transmitting simultaneously, the ADSL upstream capacity is temporarily shared between these VCCs. When one VCC is idle, the bandwidth is used by another VCC.

The ADSL transmission is based on the DMT line code. M1122 provides a DMT line rate up to 8 Mbit/s downstream and up to 800 kbit/s upstream. The DMT transceiver is rate adaptive and capable of providing faster rates over short distances or slower rates over long distances. The transceiver adapts itself to the line conditions. M1122 supports also ADSL Lite. In the ADSL Lite mode, the maximum line rates are 1536 kbit/s downstream and 512 kbit/s upstream.

M1122 supports both G.992.1 and G.992.2 ADSL recommendations defined by ITU-T.

Rate adaptation is done in steps of 32 kbit/s. The ADSL interface of M1122 functions completely automatically and all configuration related to the ADSL connection is done at the access multiplexer in the operator's premises. The network operator can set the data rates as a part of the network management functionality provided by Nokia DSLAM.

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4.7 Point-to-Point Tunneling Protocol (PPTP)

When PPTP local tunneling is used, a local network client initialises a PPTP-tunneled PPP connection (VPN) to Nokia M1122. The modem terminates the tunnel and all data from that terminated local PPTP tunnel will be forwarded to an assigned ATM VCC by using PPP over AAL5 encapsulation. Thus, each local PPTP tunnel requires an equivalent ATM VCC assigned to it restricting the total number of local PPTP hosts to 8.

Local tunneling is used when there is a need to have one or more computers connected independently to different networks. For example, in remote work application, the rest of the family may be using the common ISP services and one or two family members need to gain access to their corporate networks. With local tunneling, these remote workers may be connected to a different network than the rest of the users.

Local tunneling is activated using the PPTP client running, for example, in Windows The destination IP address must be M1122 LAN/VBRIDGE IP address depending on the configuration. PPP packets within PPTP are mapped to the configured VCC. M1122 has three different ways to choose the ATM VCC that will be used for tunneling:

- Automatic, chooses the first free VCC
- Chooses the VCC number using C:number, where number is from 1 to 8. C:number is fed after the M1122 IP address (see Figure 17).
- Chooses the VCC number using N:name, where name is the VCCx description. N:name is typed after the M1122 IP address.

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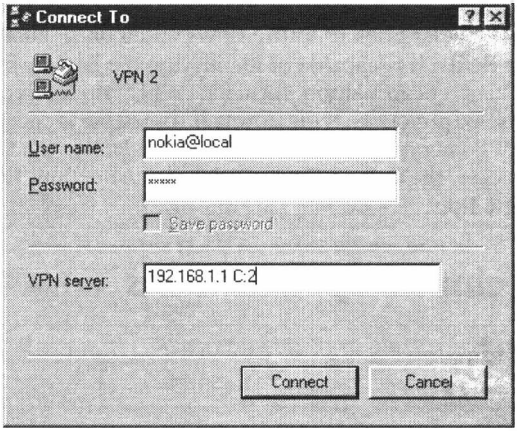

Figure 17 Choosing the VCC2 for tunneling example

4.8 Point-to-Point Protocol over Ethernet (PPPoE)

Standard PPPoE mode is used when M1122 is operating as a bridge. PPPoE protocol defines how PPP sessions are mapped into Ethernet packets. When M1122 operates as a bridge, this protocol is transparent to M1122.

4.9 Payload encapsulations

Both routed and bridged protocols are encapsulated in the ATM link by using either RFC 2684 LLC/SNAP encapsulation or VC multiplexing. M1122 also supports PPP over AAL5 encapsulation, in which routed protocols are first encapsulated in PPP (RFC 1661). PPP is then encapsulated in ATM according to the IETF PPP over AAL5 using RFC 2364 VC multiplexing or LLC/NLPID encapsulation.

4.10 Weighted Fair Queueing (Class of Service)

As a Class of Service (CoS) function, M1122 supports Weighted Fair Queueing (WFQ) for each ATM VCC. The CoS function ensures that different IP traffic flows are treated fairly in the upstream (towards the Internet) direction. This may be necessary, in some cases, because the upstream capacity of the ADSL line is somewhat limited compared to

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the Ethernet bandwidth on the office or home LAN. The WFQ CoS function classifies IP traffic flows based on IP address, protocol and port fields. It is capable of identifying the IP flow from all supported payload encapsulation formats. WFQ works properly only with IP-based protocols. If the flow is IP-based but is encrypted using IPSec or PPP encryption, then WFQ cannot identify the flows correctly. In this case, the default flow is used and the default flow is treated as a single flow.

5 Technical specifications

Features	
ADSL	
Physical layer	ANSI T1.413 Issue 2 (ANSI ADSL), ITU-T G.992.1 (ITU-T ADSL), and ITU-T G.994.1 (Handshake) compatible.
ADSL line connector	RJ-11
ATM over ADSL	
ATM connections	PVC, up to 8 virtual circuits
Service categories	UBR
Encapsulations	RFC2684 ETH-LLC, RFC2684 IP-LLC, RFC2364 PPP-VC, RFC2364 TUNNELED-PPP-VC
Ethernet interface	
Ethernet	10Base-T, half duplex
Encapsulation	DIXv2 (transmit), IEEE 802.3 and DIXv2 (receive)
Ethernet connectors	RJ-45
Routing	
Routing protocols	RIPv1, RIPv2, and static routes
Other	NAPT, IGMP proxy, DHCP server, DHCP relay, DNS relay, PPTP local tunneling
Class of Service	Weighted fair queueing

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Bridging	
Bridging	Self-learning bridge, bridges between all interfaces. Possibility to disable bridging between WAN interfaces.
MAC table	1024 entries
Class of Service	Weighted fair queueing
Command line interface (CLI) for local management	
Physical layer	Electrically RS-232, TxD, RxD and GND signals
Data format	Asynchronous, 8+no parity
Bit rate	9600 bps
Flow control	None
CLI connector	RJ-45
Dedicated ATM management channel	
Service categories	UBR
Encapsulations	RFC2684 ETH-LLC, RFC2684 IP-LLC, RFC2364 PPP-VC
IP addressing	Statically configured Through IPCP when PPP over ATM is used
Routing	Static routes RIPv1, RIPv2
Management protocols	Telnet/TCP/IP for command line interface, TFTP/UDP/IP for software and configuration download, HTTP/web server
Management through payload	
Management protocols	Telnet/TCP/IP for command line interface, TFTP/UDP/IP for software and configuration download, HTTP/web server
Indicator lights	
DSL	ADSL line status
ETH	Ethernet activity and status
COL	Ethernet collision
STA	M1122 startup error
PWR	Power on

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5.1 Connectors and pin numbering

The pin numberings are given here if you want to obtain longer cables for your M1122.

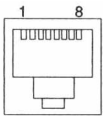

Figure 18 ETH connector

PIN	Signal	Direction M1122-Ethernet	MDI signal
1	Rx+	<–	Receive data +
2	Rx–	<–	Receive data –
3	Tx+	–>	Transmit data +
6	Tx–	–>	Transmit data –

Table 1 Ethernet interface pin-out numbering

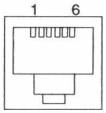

Figure 19 DSL connector

PIN	Signal
3	DSL1
4	DSL2

Table 2 ADSL interface pin-out numbering

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5.2 Ambient conditions, EMC and safety

Ambient conditions

Operating temperature range	5 to 45°C
Humidity	10% to 90%, non-condensing

EMC

M1122 complies with the following specifications provided that the device is connected to an earthed socket outlet:

Emission	EN55022: 1998 class B
Immunity	EN55024: 1998
EMC	EN300386-2: 1997
Overvoltage	ITU-T K.21

Safety

Safety	EN60950

5.3 Copyright note

HTTP server, Copyright 1996, 1997, 1998, 1999 Michiel Boland.

6 Glossary

Abbreviations

ADSL	Asymmetric digital subscriber line
ALG	Application layer gateway
ATM	Asynchronous transfer mode
CLI	Command line interface
COL	Collision
DHCP	Dynamic host configuration protocol
DMT	Discrete multitone
DNS	Domain name system

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DSL	Digital subscriber line
DSLAM	Digital Subscriber Line Access Multiplexer
EMC	Electromagnetic compatibility
ETH	Ethernet
IP	Internet protocol
ISP	Internet service provider
LAN	Local area network
LLC	Logical link control
MAC	Media access control
PC	Personal computer
POTS	Plain old telephone system
PPP	Point-to-point protocol
PPTP	Point-to-point tunneling protocol
PWR	Power
RFC	Request for comments
RIP	Routing information protocol
STA	Status
TCP	Transmission control protocol
UBR	Unspecified bit rate
VCC	Virtual channel connection
VCI	Virtual channel identifier
WWW	World Wide Web

Terms

10Base-T

10 Mbit/s Ethernet specification using two pairs of twisted cabling. 10Base-T is a part of the IEEE 802.3 specification.

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ATM access network

An access network where traffic from the subscribers is multiplexed and forwarded using ATM technology.

bridge

A device that connects two or more physical networks and forwards packets between them. Bridges can usually be made to filter packets, that is, to forward only certain traffic.

command line interface

Character-based man-machine interface where a command line ending with <CR> character is used to configure a device. The device interprets the command and returns a character-based response.

Digital Subscriber Line Access Multiplexer

A network element which multiplexes the traffic coming from the high-speed subscriber lines and forwards this traffic to the ATM network.

encapsulation

Wrapping of data in a protocol header.

Ethernet

LAN specification IEEE 802.3.

host

Computer system on a network.

IP network

Data communications network based on the Internet Protocol.

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MAC address

Ethernet address.

multiplexer

A device where several logical connections are combined into one physical connection.

POTS filter

A device used for separating the telephone signal from data signals in the digital subscriber line.

telecommuter

A person who works at home with data communications to the central office.

virtual channel

A communications channel which provides for the sequential unidirectional transport of ATM cells.

virtual channel connection

A concatenation of virtual channel links that extends between the points where the ATM service users access the ATM layer.

web browser

A software that is used to browse the World Wide Web.

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